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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,170	07/25/2003	Jean-Francois LeCostaouec	930021-2023	3894
20999	7590	12/15/2004	EXAMINER	
FROMMERM LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151			AUSTIN, MELISSA J	
		ART UNIT	PAPER NUMBER	
			1745	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/627,170	LECOSTAOUEC ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Melissa Austin	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 6/17/04.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 July 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date: _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/17/2004</u> | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Information Disclosure Statement***

1. The Information Disclosure Statement (IDS) filed on 17 June 2004 has been considered by the examiner.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The term "approximately" in claims 2, 10, and 18 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The use of the term "approximately" does not provide definite upper and lower bounds for the particle size range of carbon black in claims 2, 10, and 18.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Reynolds, III et al. (US 2004/0121122), as evidenced by [www.matweb.com](http://www.matweb.com). Reynolds teaches a flexible graphite sheet with a carbonaceous coating adhered by the use of a hydrophobic polymeric binder that is suitable for use as a gas diffusion layer (GDL or electrode) for a fuel cell and a process for making such a sheet. The

carbonaceous material may comprise material containing or yielding carbon, such as graphite, carbon nanotubes, carbon fibers, graphite fibers, carbon black, activated carbon, Vulcan carbon, graphite or carbon nanofibers, and combinations thereof (applicant's carbon black and graphite and carbon particulates; also applicant's claimed specific carbon particulates as all are carbon). Suitable binders are generally fluorinated resins, such as PVDF and PTFE (applicant's fluoropolymer). The carbonaceous material(s) is combined with a solution of the binder in solvent. The resultant mixture is applied to the GDL by conventional coating means. The GDL has increased strength and improved durability over conventional GDLs and upon bending, the coating does not crack or flake. Typical particle size for a carbon black is less than 50 nm (Chevron Phillips Acetylene Black = 42nm; applicant's 13-95 nm). The carbon particulates (carbon fibers, carbon or graphite flakes, carbon nanotubes or fibrils or whiskers) claimed by applicant must be substantially larger than the carbon black otherwise the dependent claims are not within the scope of the independent claim(s). High aspect ratios are well known by those skilled in the arts of material science and nanotechnology to be available for the carbon particulates as claimed by applicant (for example carbon nanotubes and whiskers: [www.applied-nanotech.com](http://www.applied-nanotech.com); [http://www.sdk.co.jp/contents\\_e/](http://www.sdk.co.jp/contents_e/)). (Pg. 2, [0022]; Pg. 1, [0008]; Pg. 5, [0051]; Pg. 6, [0057]; Pg. 7, [0067]; Pg. 3, [0025]; Pg. 8, [0074]; [www.matweb.com](http://www.matweb.com))

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.  
Matsubara et al. (US 2003/072991): catalytic (catalyst carrying carbon black) layer containing fibrous material such as carbon whiskers with fluoropolymer bonding agent to prevent cracking of coating.  
Brown et al. (CA 2,311,962): filler material coated on gas diffusion substrate containing carbon black, a fluoropolymer, and modifier of hollow, porous or solid spherical or fibrous carbon.  
Takano et al. (6,544,680): fuel cell separator made of graphitized meso-carbon microspheres, thermosetting resin (PVDF), and at least one carbonaceous material (graphite powder, carbon black, nanofibers).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Austin whose telephone number is (571) 272-1247. The examiner can normally be reached on Monday - Thursday, alt. Friday, 7:15 AM - 4:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mja

Melissa Austin  
Patent Examiner  
Art Unit 1745

